Hardware and Network Troubleshooting

CompTIA A+ certification, Core 1 (220-1201) and Core 2 (220-1202)

28% of the exam · 6 exam objectives · 220-1201

Domain 5 is about reading symptoms and tracing them to the part or setting that causes them: motherboards, RAM, CPUs and power (POST beeps, crash screens, no power, overheating, swollen capacitors); drives and RAID (clicking, grinding, S.M.A.R.T. warnings, missing arrays and low IOPS); video, projectors and displays (wrong input, dim or distorted images, burn-in, dead pixels); mobile devices (batteries, screens, ports, liquid, malware, connectivity); networks (APIPA addresses, jitter, latency, port flapping, interference, authentication failures); and printers (lines, ghosts, speckles, jams, garbled print, finishers and frozen queues). The skill tested is matching each symptom to its most likely cause and the fix that follows.

You should be able to: A PC shows a 169.254.x.x address, and a laser printer on the same desk prints a faint second copy of the text below the real text. What does each symptom point to?

Every exam objective: the key point and the trap

5.1 Given a scenario, troubleshoot motherboards, RAM, CPUs, and power.

No power (no lights, no fans) with a working outlet points to the power supply or its cables; random shutdowns point to a failing power supply or to overheating.

Trap: Replacing the CMOS battery for every startup problem. The battery explains a lost clock and lost firmware settings, not shutdowns, crashes or a computer with no power.

5.2 Given a scenario, troubleshoot drive and RAID issues.

Clicking and grinding noises from a hard disk drive mean mechanical failure: back up the data at once and replace the drive.

Trap: Treating a missing drive or array as a dead disk and initializing or reformatting it, which destroys data that a cable, a setting or a rebuild would have saved.

5.3 Given a scenario, troubleshoot video, projector, and display issues.

No signal with a cable connected: check the incorrect input source first, then the physical cabling (loose plugs, bent pins, damaged cables, a cable through a laptop hinge).

Trap: Replacing a cable or driver when the display is simply on the wrong input, or blaming the graphics card for a projector problem that comes from its lamp, filter, focus or keystone.

5.4 Given a scenario, troubleshoot common mobile device issues.

Poor battery health shows as fast drain and sudden shutdowns; a swollen battery lifts the case or screen and must be removed from use, never pressed or punctured, then replaced and recycled.

Trap: Replacing the battery or the screen for symptoms that come from software, settings or a screen protector.

5.5 Given a scenario, troubleshoot network issues.

Intermittent wireless connectivity often follows distance from the access point, obstacles or external interference such as microwave ovens and cordless phones on 2.4 GHz.

Trap: Treating every connectivity complaint as a DNS problem; an APIPA address, a flapping port and a jittery link each point somewhere else.

5.6 Given a scenario, troubleshoot printer issues.

Lines down the printed pages of a laser printer point to the drum or toner cartridge; double or echo images mean the drum is not cleaned or discharged between rotations.

Trap: Blaming the driver for image defects such as lines, ghosts or speckles; a driver fault shows as garbled output, not marks on an otherwise correct page.

Key terms

POST: Power-on Self-test

S.M.A.R.T: Self-monitoring Analysis and Reporting Technology

RAID: Redundant Array of Independent Disks

IOPS: Input/Output Operations Per Second

LED: Light-emitting Diode

VoIP: Voice over Internet Protocol

QoS: Quality of Service

APIPA: Automatic Private Internet Protocol Addressing

DHCP: Dynamic Host Configuration Protocol

SSID: Service Set Identifier

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